

NOTES ON SOME HAWAIIAN SPECIES OF DRUPA AND OTHER SHELLS.

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The dredging of the channel of Honolulu Harbor by the government has brought to light many shells which were either unknown before or among the greatest rarities to Honolulu collections. The specimens picked up on the "dump" are often quite perfect, though usually somewhat faded. Part of the same species have been dredged alive by Mr. D. B. Kuhns, the senior author having received specimens though Mr. D. Thaanum of Hilo.

DRUPA WALKERAE n. sp. Pl. 9 fig. 4.

Honolulu Harbor, W. A. and E. L. Bryan.

The shell is oblong-fusiform, very solid, the ground color light buff. It is rather weakly plicate longitudinally, the folds and valleys crossed by spiral cords, of which five on the last whorl are larger, bearing *erect liver-brown spines* upon the folds; two or three small spirals are between each pair of the larger ones; all of the cords being densely scaly, the scales weaker between the cords. On the penult whorl there are two spiral series of colored spines, and one on each of several earlier whorls. The spine is straightly conic, the apex rather acute (not perfect in any of the specimens). The aperture is rather narrow, white. There is a series of about 6 teeth within the outer lip. The columella is straight, massive, excised at the canal; below the middle there are several short, transverse and inconspicuous folds.

Length 25, diam. (including spines) 16 mm. (type).

Length 27, diam. (including spines) 16 mm. (old specimen with worn spines).

This handsome species is named for Miss Mary Walker, of Buffalo, N. Y., long an enthusiastic collector of shells. It has some resemblance to *S. fragum* (Blainville), but in that species the aperture is wide, there is a row of spots in place of spines below the suture, and the details of sculpture differ. *S. concatenatum* (Lam.) differs in color, in the absence of strong sub-sutural spines, the more open aperture, and details of sculpture. Both have shorter spines than the Hawaiian shell, often tubercles rather than spines.

DRUPA FOLIACEA (Conrad). Pl. 9, figs. 1, 2, 3.

P. [urpura] foliacea Conrad. Journ. A. N. S. Phila., vol. 7, 1837, p. 268, pl. 20, fig. 24.

Atooi [= Kauai] Conrad. Kaena, Kauai and Honolulu Harbor, W. E. and E. L. Bryan. Kewalo beach, east of Honolulu, Pilsbry. "Shell short fusiform, ventricose, with longitudinal undulations and spiral costæ; whorls with crowded spiral foliated striæ; labrum costate within, margin foliated; columella with an obtuse or obsolete fold. Inhabits the Island of Atooi" (Conrad.)

We do not know that this species has been recognized hitherto, though it was quite recognizably described and figured. Tryon in Manual of Conchology, vol. 2, considered it a synonym of the very different *Coralliophila bulbiformis* (Conrad). It has been found in some abundance in material dredged from Honolulu Harbor, by Professor and Mrs. Bryan, and the senior writer picked up a living specimen on the reef at Kewalo.

The shape is rather variable, as shown in the figures. The longitudinal folds, eight or ten on the last whorl, are crossed by four or five larger cords and numerous small threads. The cords and intervals are densely, minutely scaly, the whole shell being particularly rough and prickly. The shoulder is either nodular, or in some specimens spinose. There are about seven well developed teeth within the outer lip. The columella is heavy, straight, with a small, blunt, median prominence, recalling the fold of *Cymia* on a small scale.

The ground tint varies from light buff to pallid neutral gray, the summits of the folds and spines or tubercles being dull dark vinaceous. The aperture varies from fawn color to nearly white.

Two specimens measure:

Length 33.5, diam. 21.5 mm.

Length 28.5, diam. 21.5 mm.

There is also a small specimen in the Bryan collection from Ocean Island, collected by Capt. J. H. Brown.

FUSINUS SANDVICHENSIS (Sowb.) Pl. 9, fig. 8.

Honolulu Harbor channel, D. Thaanum, W. A. and E. L.

Bryan ; off Honolulu in 5-8 fms., and off Waikiki in 30 fathoms, D. B. Kuhns.

The shell is white, covered with a thin, straw-yellow cuticle, and stained with russet at the tip, having a very long anterior canal, and a long spire ; longitudinally folded, the folds broad, rounded, about seven on a whorl, crossed by numerous spiral cords, parted by wider, concave intervals, with weak, fine spirals over the cords and intervals. On the earlier post-nuclear whorls there are four large and one small spiral cords. The cuticle has minute, close longitudinal raised threads, which are slightly bristly at intersections of the spirals (the bristles deciduous, and mainly lost in dry shells). The aperture is short, oval, lirate within ; canal long and slender. The whorls are strongly convex. Embryonic shell of two whorls, the first bulbous, obliquely swollen, smooth, 0.7 mm. in diameter ; the next whorl narrower, less convex, its last half closely costulate ; the total length of the embryonic shell is 1.1 mm.

Length 71.5, diam. 19.5 mm. ; 12 whorls.

Length 105, diam. 29.5 mm. ; 12 post-embryonic whorls, the apex broken.

This species resembles *F. turricula* Kiener,¹ which however has a decidedly deeper suture, and the embryonic whorl is much larger. The type was an immature but perfect shell. The larger ones, from the "dump" of the harbor channel, are without cuticle and apical whorls. In them the folds became shortened on the last whorl, into nodes at the shoulder. It is a handsome and graceful species.

PERISTERIA THAANUMI n. sp. Pl. 9, figs. 6, 7.

Off Waikiki in 35 to 50 fathoms, D. B. Kuhns, 1916; Honolulu Harbor, W. A. and E. L. Bryan.

The shell is fusiform, thick and solid, pecan-brown, sculpture of strong, rounded, longitudinal folds, 8 on the last whorl, continuous from whorl to whorl. These are crossed by rather coarse spiral cords, of which there are four on the penult, nine or ten on the last whorl; usually a minor cord divides the intervals ; and under the lens numerous spiral and axial threads are seen,

¹Iconogr. Cog. vii, p. 6, pl. 5, fig. 1.

resembling a loosely woven fabric. The aperture is somewhat oblique, contracted, obtuse posteriorly, tourmaline-pink around the lips, paler, nearly white, in the throat. The outer lip is thickened within except posteriorly where it is excavated; the thickening bearing about seven teeth, the upper ones larger. The columella has two or three blunt and low but deeply entering folds. The inner lip has a thin free edge. The siphonal fasciole is deeply striate spirally.

Length 21, diam. 11 mm. (type).

Length 23.8, diam. 12.3 mm. (Honolulu Harbor).

The specimens from the Honolulu Harbor dump, though quite perfect in appearance, are evidently bleached. The color is a handsome maize-yellow, uniform, or sometimes a shade darker on the high points of the sculpture. The aperture is pure white (fig. 6.)

This species, though differing in color and sculpture, is related to *P. incarnata* Dh., "*Ricinula*" *pulchra* Reeve, and *P. carolinæ* Kiener—species somewhat like *Cantharus* or *Drupa*. A section shows that the two columellar plaits are strong within, ascending the pillar.

DRUPA MORUS (Lam.). Pl. 9, fig. 11.

Ricinula morus Lam., An. s. Vert. vii, 1822, p. 232. Encycl. Meth., pl. 395, fig. 6 a, b.

Haena, Kauai, Honolulu Harbor; Mokumanu, off Mokapu Point, and Kainalu, Oahu.

The specimens from the harbor are rather small, length up to about 16–18 mm., but otherwise they appear typical. A specimen from Kainalu is 22 mm. long. Lamarck referred to excellent figures in the Encycl. Methodique, but also to Lister, 954: 4, 5, and Martini III, 101: 970; both are dubious and inconclusive illustrations, which served as the sole basis of *Drupa uva* Bolten, Mus. Bolt., p. 56, no. 703. They look more like some forms of *D. tuberculata* than like *morus*; and we prefer to use the positively identified name.

The common Hawaiian species of the genus is *Drupa tuberculata* (Blainv.), which the authors have from various places in Kauai, Oahu, Molokai, and on Molokini. It occurs at low tide, and may be picked up on any reef or rocky shore (pl. 9, fig. 10.)